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Whole-Body-CT First, FAST second

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Commentary

The adequate initial diagnostic in the resuscitation room lately became a big topic of discussion.

The American standard of trauma diagnostic includes a focused assessment with sonography for trauma (FAST) within the primary survey as proclaimed by the American College of Surgeons' Committee on Trauma and taught in the advanced trauma life support (ATLS®) [1].

Zanobetti et al. [2] proved their CA-FAST protocol to be a rapid bedside method, with good accuracy in detection of ultrasonographical patterns suggestive of serious injury in trauma patients. Ultrasonography should be used as initial investigation during the primary survey, sending to further diagnostic studies (CT scan) only those patients not clearly classified.

Sonography in trauma patients can be associated with obstacles as within obese patients or patients with intestinal gas. A retroperitoneal bleeding might be difficult to realize as there is no free fluid seen in the abdomen. Also, small hollow viscus organ lesions can easily be missed. A delay of the diagnose of a hollow viscus organ injury, such as a small bowel injury, has a major impact on the morbidity and mortality of trauma patients.

A study of Niederee et al. [3] indicate that the prolonged time to repair of a perforated small bowel injury increased both morbidity and mortality. When operative control of enteric contamination was delayed (>24 hours), there was a significant increase in the rates of intra-abdominal abscess, sepsis, and wound dehiscence compared with perforations repaired early (<8 hours). In the patients who had isolated perforation of the small bowel (no other injury with an Abbreviated Injury Scale score >1), differences were also dramatic. Patients with perforated small bowel injuries who had their repair performed within 8 hours had a significantly lower overall complication rate and lower rates of acute renal failure and sepsis. Time to operative intervention was a major factor in mortality.

In the isolated small bowel injury group, mortality nearly quadrupled by delaying operative repair past 24 hours. Patients who had their repair performed within 24 hours had 4% mortality, whereas patients who had their repair performed after 24 hours had 15% mortality (p 0.029).

Whilst treating polytraumatized patients we examined an advantage in preferring a primary Whole-Body-CT scan to a FAST.

In a survey of members of the American Association for the Surgery of Trauma, CT scan emerged as the most common diagnostic tool in the stable blunt trauma patient [4].

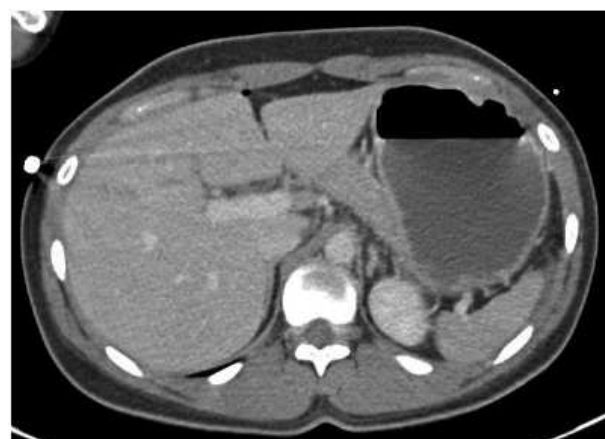


Figure 1 Hollow viscus organ perforation on an abdominal CT-Scan.

Huber-Wagner et al. [5] have shown that Whole-Body-CT significantly increases the survival rate in hemodynamically stable as well as unstable patients. This statement is underlined by an USZ Online survey of the year 2015 showing the abdominal CT with intravenous contrast agent had top priority in 51% of the 175 participating departments. Even small hollow viscus lesions can be detected with a high sensitivity (Figure 1).

Although some authors have proposed abdominal CT scan as an accurate method for diagnosing small bowel injuries, false negative rates of approximately 6% to 15% have made it difficult to endorse CT scan as a reliable test for excluding small bowel injuries [6].



Figure 2 Intraoperative Image of a small bowel lesion

A Whole-Body-CT scan can be performed within a few minutes after the patients' admission and detect abdominal injuries, as well as other trauma related injuries with high significance and reduce the mortality and morbidity.



Figure 3 Retroperitoneal bleeding by a kidney rupture on an abdominal CT-Scan

If there is a high grade of suspicion of a blunt hollow viscus organ injury in a polytrauma patient by the mechanism of injury and the clinical examination, we recommend an early abdominal CT or Whole-Body-CT scan for primary diagnostics. Not to forget there is an up to 15% chance of false negative results. If in doubt, take the laparoscope in and be aware, delayed diagnosis can be fatal (**Figures 2 and 3**).

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